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Laparoendoscopic single-site donor nephrectomy (LESS-DN) versus standard laparoscopic donor nephrectomy (Review)

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[Intervention Review]

Laparoendoscopic single-site donor nephrectomy (LESS-DN) versus standard laparoscopic donor nephrectomy

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ABSTRACT

Background

Advances in minimally invasive surgery for live kidney donors have led to the development of laparoendoscopic single site donor nephrectomy (LESS-DN). At present, laparoscopic donor nephrectomy is the technique of choice for donor nephrectomy globally. Compared with open surgical approaches, laparoscopic donor nephrectomy is associated with decreased morbidity, faster recovery times and return to normal activity, and shorter hospital stays. LESS-DN differs from standard laparoscopic donor nephrectomy; LESS-DN requires a single incision through which the procedure is performed and donor kidney is removed. Previous studies have hypothesised that LESS-DN may provide additional benefits for kidney donors and stimulate increased donor rates.

Objectives

This review looked at the benefits and harms of LESS-DN compared with standard laparoscopic nephrectomy for live kidney donors.

Search methods

We searched the Cochrane Kidney and Transplant's Specialised Register to 28 January 2016 through contact with the Information Specialist using search terms relevant to this review.

Selection criteria

We included randomised controlled trials (RCTs) that compared LESS-DN with laparoscopic donor nephrectomy in adults.

Data collection and analysis

Three authors independently assessed studies for eligibility and conducted risk of bias evaluation. Summary estimates of effect were obtained using a random-effects model and results were expressed as risk ratios (RR) or risk difference (RD) and their 95% confidence intervals (CI) for dichotomous outcomes, and mean difference (MD) and 95% CI for continuous outcomes.

Main results

We included three studies (179 participants) comparing LESS-DN with laparoscopic donor nephrectomy. There were no significant differences between LESS-DN and laparoscopic donor nephrectomy for mean operative time (2 studies, 79 participants: MD 6.36 min, 95% CI -11.85 to 24.57), intra-operative blood loss (2 studies, 79 participants: MD -8.31 mL, 95% CI -23.70 to 7.09), or complication rates (3 studies, 179 participants: RD 0.05, 95% CI -0.04 to 0.14). Pain scores at discharge were significantly less in the LESS-DN group (2 studies, 79 participants: MD -1.19, 95% CI -2.17 to -0.21). For all other outcomes (length of hospital stay; length of time to return to normal activities; blood transfusions; conversion to another form of surgery; warm ischaemia time; total analgesic requirement; graft loss) there were no significant differences observed.

Although risk of bias was assessed as low overall, one study was assessed at high risk of attrition bias.

Authors' conclusions

Given the small number and size of included studies it is uncertain whether LESS-DN is better than laparoscopic donor nephrectomy. Well designed and adequately powered RCTs are needed to better define the role of LESS-DN as a minimally invasive option for kidney donor surgery.

PLAIN LANGUAGE SUMMARY

Laparoendoscopic single-site donor nephrectomy (LESS-DN) versus standard laparoscopic donor nephrectomy

Background

Kidney transplantation is well established and has a vital role in improving quality of life and longevity for people with end-stage kidney disease (ESKD). Open surgical techniques lead to more postoperative pain, a longer hospital stay and a poorer cosmetic outcome for donors but advances in surgical techniques has meant that keyhole surgery is now the gold standard for removing donors' kidneys for transplantation. Keyhole surgery has shorter recovery times, minimal scarring and better outcomes for both donor and recipient. An alternative of this technique is for the surgeon to make a single incision (single site) in the patient's abdomen to enable removal of the kidney.

We aimed to assess if LESS-DN provided benefits compared with standard laparoscopic donor nephrectomy.

Study characteristics

We searched to literature up to January 2016 and found three studies (reported in 5 publications that involved 179 participants) that compared these two types of kidney donor surgeries.

Key results

LESS-DN was found to be as safe as standard keyhole surgical techniques; pain at discharge was significantly less with LESS-DN, however there were no other discernible benefits over the standard technique.

Quality of the evidence

Overall, we found there was a low risk of bias for all studies; however, funding sources were not reported in two or three studies, and there was high risk of attrition bias in one study. The small number of studies with few participants eligible for inclusion indicates a need for future research in this area.